



NARUC

Directions in Electricity: **Issues Facing Commissions**

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ASERTTI Meeting
Feb 12 2007
Washington DC



What is NARUC?

- Members are the state regulatory bodies that oversee utility activities: water, telecom, electricity, gas, and other services
- Primary roles include economic regulation, planning, siting, reliability, etc.
- Grants & Research: projects focus on solving problems that Commissioners identify, about 50% of which are energy-related

Disclaimer:

These are my personal observations, not NARUC positions or the expressed views of any of its members.



Challenges in Electricity

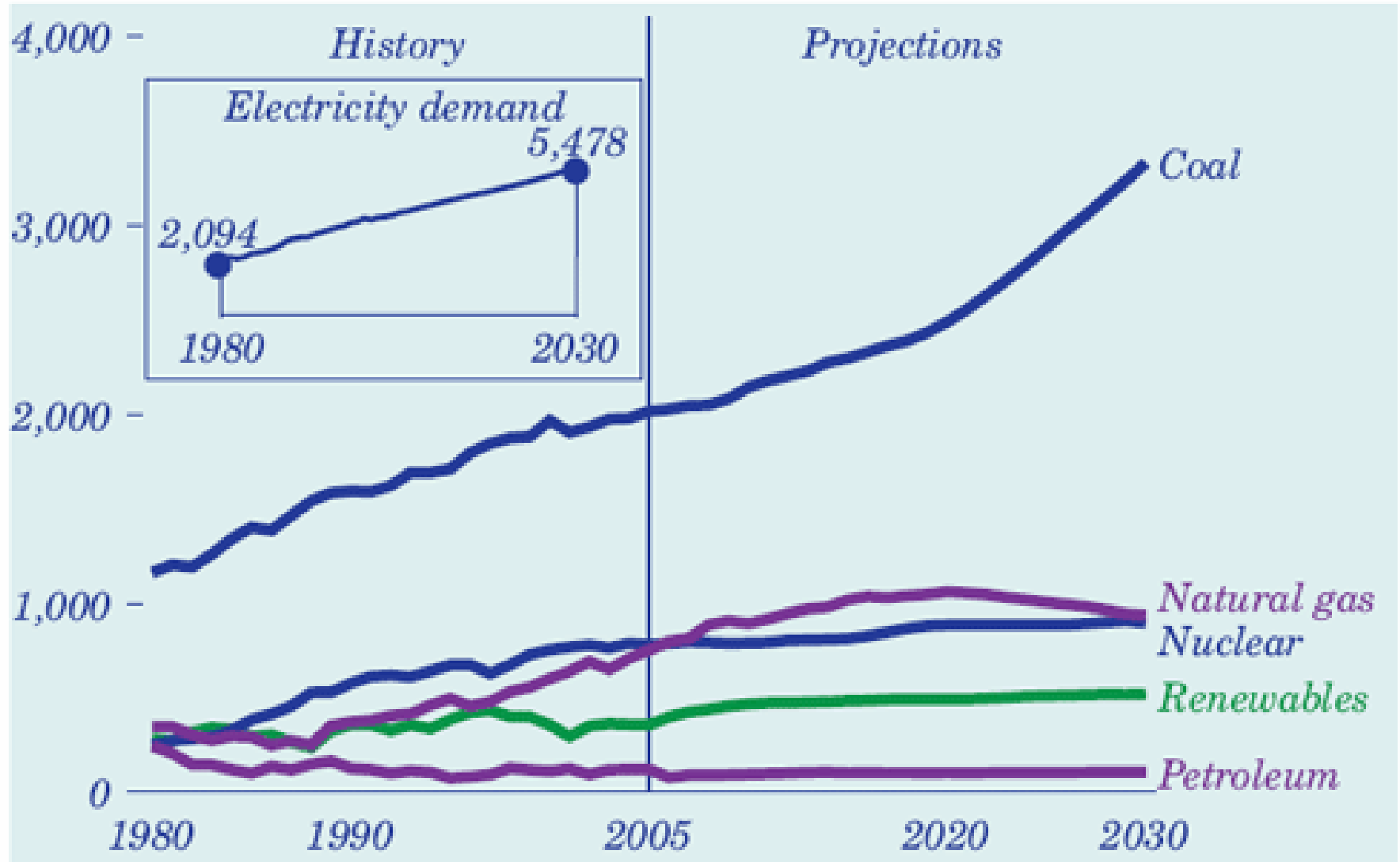
- Supply
(Generation)
- Delivery
(Transmission & Distribution)
- Demand
(efficiency, consumption, and response)





**Figure 5. Electricity generation by fuel, 1980-2030
(billion kilowatthours)**

EIA Energy Outlook, 2007





Supply

- Commissions are responsible for ensuring affordable, reliable electricity service for consumers.
- Growth in demand spurs consideration of new supply, but there are few clear choices
- Siting & NIMBY, environmental & climate considerations, infrastructure finance, fuel price risks, regulatory shifts all make building new generation tricky.
- What technology-specific challenges are Commissions facing?



Utility-Scale Renewables

- Wind energy has emerged as a strong new energy source. Technology challenges:
 - System integration issues that cope with intermittency:
 - interconnection,
 - forecasting,
 - transmission technologies and economic products
 - Capacity factors – wind is not a baseload resource
 - Offshore and near-shore technologies
 - Radar, wildlife, and other siting issues



Advanced Coal

- Consensus: we're not going to ignore it.
- IGCC vs Supercritical PC
 - What are the technology trade-offs?
 - What is the balance between bearing environ / climate risks and higher costs?
 - Are these expenses “prudent and necessary”? What is the policy driver?
- Unanswered Q's from Climate:
 - What are the capture / sequestration techs going to cost? How will they work? Who will pay?
 - How to permit new facilities that are electricity and chemical? Who is in charge?
 - How to permit a carbon pipeline? Sequestration field?
 - How to insure a sequestration site for 10,000 years?



Nuclear & Gas

- Nuclear: is this a renaissance?
- Unanswered questions:
 - Waste
 - Safety
 - Proliferation
 - Cost
- Gas: have we overcommitted?
- What role for LNG and Alaska?
- LNG Technology challenges:
 - What safety issues exist?
 - What interchangeability issues exist?



Distributed Renewables

- Solar and Wind energy provide consumer-side technology opportunities. Technology challenges:
 - Reliability and maintenance
 - Including workforce questions
 - Up-front cost and payback
 - Policy changes and incentives help, but are filling the gap while technology catches up
 - Policy reforms
 - Interconnection
 - Net-metering



Delivery: Transmission

- What's needed? A lot.
- Directions:
 - How can we get more of the grid to use?
 - Building new lines is a priority in every part of the country
 - High-capacity lines
 - Congested areas
 - How can we use more of the grid we have?
 - Reconductoring, monitoring, and other technologies on this generation
 - “Intelligrid” in the next generation
- Reliability questions, critical infrastructure protection create drivers for new technologies



Demand Response

- Peak-shaving activities and advanced metering can save money, but technology, pricing, and other policy issues remain as obstacles
- Consumption reduction is credited with a part in “saving” California and SW Conn.
- ISOs / RTOs can play a locus role for DR
- Better meters can be easy: many meters are fifty year-old (or older) technology. But what cost?
- A big question: does DR equal capacity?



Efficiency: Red Hot

- Five slides on supply and only one on efficiency?
- Appealing for cost/benefit, for proven technologies, for clear best practices, existing codes, and environmental / climate benefits.
- Commitment:
 - National Action Plan on Energy Efficiency;
 - WGA CDEAC goals;
 - renewed interest in Decoupling, Portfolio Management, EE-first Loading Orders and Resource Planning including Efficiency as a resource.
- Challenges: up-front costs, smart technologies, rate designs



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...and what about the future?





Summary Thoughts

- **At current rates of growth, it's likely we're going to need it all: efficiency, transmission, supply of all types**
- **No fuel choice is perfect**
- **Familiar drivers will be joined by new ones**
- **Serious barriers exist to deploying new technologies**
- **Serious efforts are underway to usher in new, clean, reliable, affordable supply-, delivery- and demand-side resources and strategies.**



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